ALASKA DEPARTMENT OF FISH AND GAME
DIVISION OF COMMERCIAL FISHERIES
NEWS RELEASE

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2013 Norton Sound Section Summer Commercial King Crab Fishery Management Strategies

The Norton Sound Section (Q3) consists of all waters in Statistical Area Q north of the latitude of Cape Romanzof (61° 49' N latitude), east of the International Dateline, and south of 66° N latitude (Figures 1 and 2). In 2010, the National Marine Fisheries Service (NMFS) closed the area above Prince of Wales to fishing. Only State waters (within 3 miles of shore) will be open to fishing above Prince of Wales. Figure 3 shows closed waters boundaries in Norton Sound that have been effective since 2002 as well as the federal closure.

The Nome office will continue to be the center of management for the summer commercial fishery. The Norton Sound open access crab fishery may open as early as 12:00 noon on June 15, by emergency order, or anytime after. The open access fishery season is expected to be finished by September 3, but usually closes sometime in August when the harvest approaches the guideline harvest level. The CDQ crab fishery will also open by emergency order and may occur earlier than or during the open access fishery, or after the open access fishery is complete. The CDQ fishery opening date will be determined when the buyer is ready to purchase CDQ crab.

The GHL for the 2013 Norton Sound Section summer commercial king crab fishery will be 495,600 pounds with 37,170 pounds allocated to the CDQ fishery and 458,430 pounds allocated to the open access fishery.

STATUS OF STOCK/RESEARCH

Since 1998 a length-based population model has been used to predict biomass for the red king crab population in Norton Sound (Zheng et al. 1998). Incorporating data from trawl surveys (Table 1), summer and winter fisheries, and historical studies going back to 1976, the model is used to project abundance estimates of legal male crabs even in years when no trawl survey occurs, allowing abundance-based management of the summer commercial crab fishery. Every time new data are incorporated into the population model, it estimates current abundance as well as revises prior years' abundances. However, estimates prior to 1996 are currently under review as survey extrapolation methodologies changed after that point, and previous biomass estimates may be revised and incorporated into the model as a result of this assessment.

The following estimates are based on the model's results from the spring of 2013 with the latest data from the 2011 trawl survey, the 2012 summer fishery, and the 2011-2012 winter study. In 2008, legal abundance estimate for the summer crab fishery was 3.35 million pounds (1.31 million crabs), up 13% from the 2.96 million pounds (1.15 million crabs) estimated for 2007. The legal abundance estimate for 2009 increased 11% from the 2008 estimate, to 3.71 million pounds (1.46 million crabs), and increased again the following year, up another 14% to 4.24 million pounds (1.66 million crabs) in 2010. An increase in abundance estimate was seen again the following year, up 4% to 4.43 million pounds (1.68 million crabs) in 2011. In 2012, the abundance estimate decreased by 5% to 4.22 million pounds (1.56 million crabs). Results from the 2008 and 2011 trawl surveys had forecasted these changes in legal abundance estimate based on prerecruit-1 and prerecruit-2 male crab abundances estimated.

From the latest trawl survey, conducted in 2011, the legal population estimate was 1.3 million crabs, 161% of the 2008 estimate, and was the highest since the 1999 survey, which showed a record abundance estimate for legal male crabs. For both prerecruit-1 and prerecruit-2 male abundances, the 2011 estimates were roughly half of the corresponding estimates from 2008. It should be noted, however, that prerecruit-1 estimate increased 2-fold outside of the standardized zone, an area from which the catch is used to estimate abundance, which suggests that the observed decline is partially due to changes in distribution. Prerecruit-1 and prerecruit-2 crabs molted over the following two years and contributed to the legal portion of the population in 2012 and 2013. Based on results from the 2011 trawl survey, indications are that legal abundance will likely remain stable in the near future.

The latest winter study data indicate that the legal proportion of the catch increased from 2007 to 2010, changed little from 2010 to 2011, and decreased in 2012 (Table 2). The record high overall male CPUE seen in 2012 and relatively stable legal CPUE seen in the four previous years suggests that the decline in proportion of legal crabs seen in 2012 was caused more by an increase in prerecruit abundance than a decline in legal crab abundance. Because prerecruit-2 crabs require two molts, the above-average proportion of prerecruit-2 male crabs seen in 2012 indicates a possible recruitment surge in 2014.

The winter project provides abundance of size classes relative to other size classes, but relative abundances do not equal absolute abundances. Absolute abundance of legal crabs is what managers ultimately need to know to establish harvest quotas. The trawl surveys provide information on absolute abundance estimates, but they only take place once every three years. Therefore, the population model is a better predictor of abundance estimates by incorporating the absolute abundances estimated from the triennial trawl surveys, with the yearly relative abundances from the winter project (and other historical data), to estimate absolute abundance, even in years when no trawl survey is conducted. However, a retrospective analysis of the model has shown a consistent overestimating of legal male crab biomass compared to what is believed to be the actual biomass. Although an exploitation rate of up to 10% of estimated biomass was allowed in regulation, retrospective analysis has shown that actual exploitation rates has probably been closer to 12% to 16% in recent years due to the determined overestimation bias of the population model. After estimating the legal male abundance based on the 2011 trawl survey results and evaluating the performance of the model in estimating legal abundance, the department has modified the model parameters so that the model better correlates with available data.

OUTLOOK FOR 2013

The department estimated harvestable legal male crab biomass for the 2013 summer commercial crab fishery at 4.13 million pounds (1.56 million crabs). The Alaska Board of Fisheries regulation enacted in 1999 and modified in March of 2012 for the Norton Sound summer red king crab fishery (5AAC 34.915) states that if the legal biomass is 3.0 million pounds or more, the harvest rate will be no more than 15%. In 2013, the department will allow an exploitation rate of 12% on the legal population (over 4.75 inch carapace width), which equates to a GHL of 495,600 pounds of crab. The CDQ allocation (at 7.5%) will be 37,170 pounds and the open access fishery allocation will be 458,430 pounds.

MANAGEMENT STRATEGY

Since the opening of a crab processing plant in Nome in 2002, most of the crabs caught have been landed in Nome. No floating crab processor is expected to operate in Norton Sound this season. At the Norton Sound Seafoods processing plant, there will be samplers on hand to take biological as well as legal measurements from crabs delivered during the CDQ and open access fisheries. If non-residents participate in the open access fishery, their catch will be sampled at the delivery dock before shipment to Anchorage.

All processors, including catcher-sellers, must register with the ADF&G office in Nome. All buyers must submit daily catch reports either by fax or email to the Nome ADF&G office with total catch by number of crabs, number of pounds, and pots pulled for the previous day. Fish tickets must be submitted weekly by buyers and catcher-sellers. **All deadloss and crabs kept for home use out of the commercial harvest must also be reported on fish tickets.** Catcher-sellers are also advised that their final fish tickets must be turned in within 24 hours of the final delivery of their catch within Norton Sound.

Fishermen must register with the ADF&G office in Nome or Unalakleet and obtain pot tags prior to setting gear in either the CDQ or open access fishery. Vessels that have a salt water circulation system in its holds or live tanks must also receive a tank inspection from either the Nome or Unalakleet ADF&G office. The pot limit is 40 pots per registered vessel, and at least one buoy on each pot must be legibly marked with the permanent ADF&G vessel license number of the king crab vessel operating the gear. All crab pots must have an escape mechanism and be fitted with either four escapement rings with minimum inside diameter of 4.5 inches, or at least one-half of one side wall composed of not less than 6.5 inches stretched mesh webbing. To replace lost tags a statement signed by the vessel operator describing how they were lost must be submitted to the Nome office. Fishermen wishing to use storage pots, of which five are allowed in addition to the 40-pot limit, to hold crabs offshore prior to delivery, must contact ADF&G in Nome to obtain storage pot tags and have the pots inspected prior to deployment. These storage pots must be unbaited with doors sewn closed, and have an escape mechanism. Permit holders are allowed to harvest up to one ton of herring or groundfish for use as bait in the commercial fishery for which the permit is held. **These fish may not be sold and must be reported on a fish ticket.** If a vessel travels outside the section to deliver their catch they must advise the Nome ADF&G office and agree to a reporting time and method prior to departure from the section.

For more information on regulations pertaining to this fishery, please contact Joyce Soong in the Nome ADF&G office.

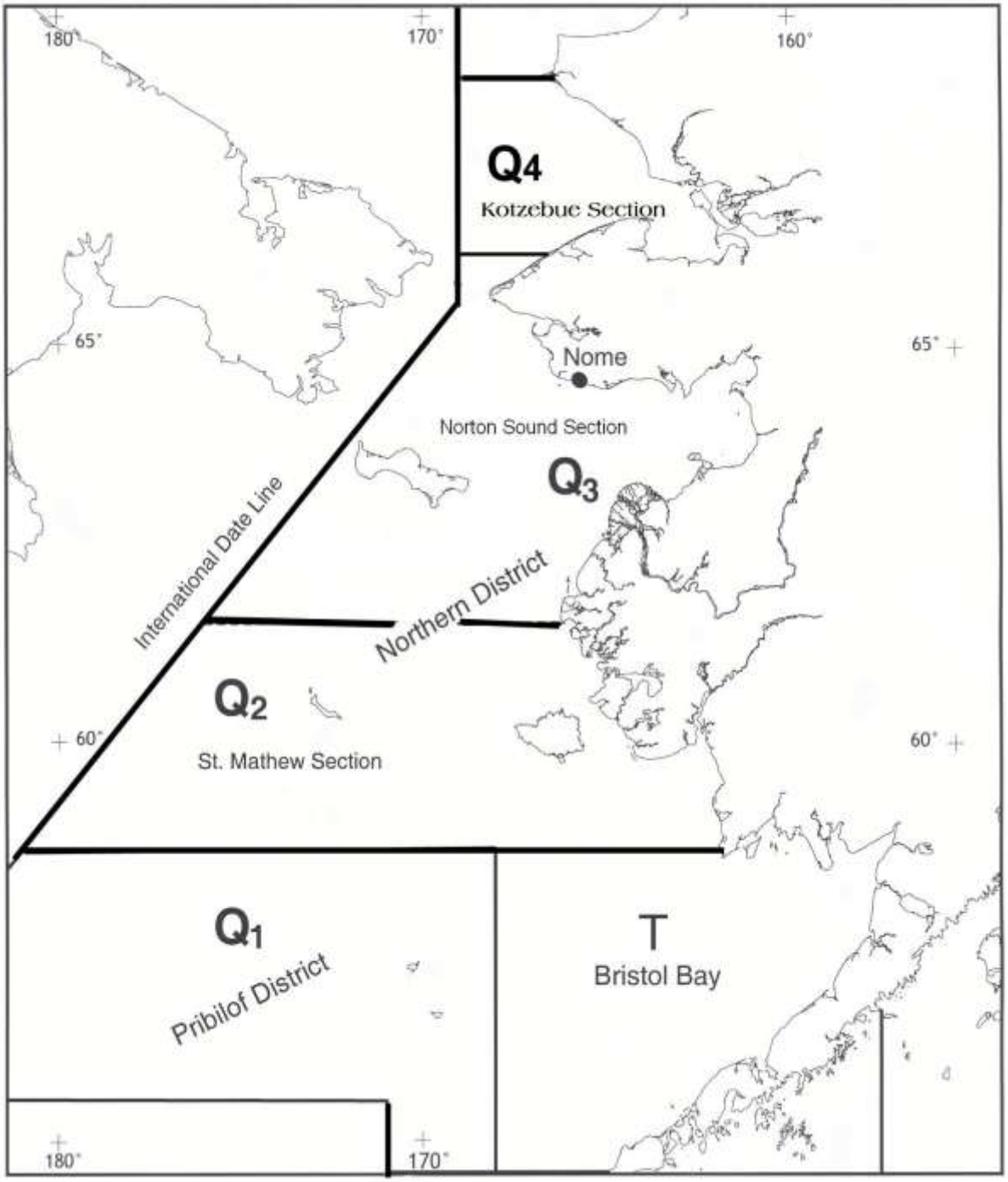

Figure 1. King crab fishing districts and sections of Statistical Areas Q.

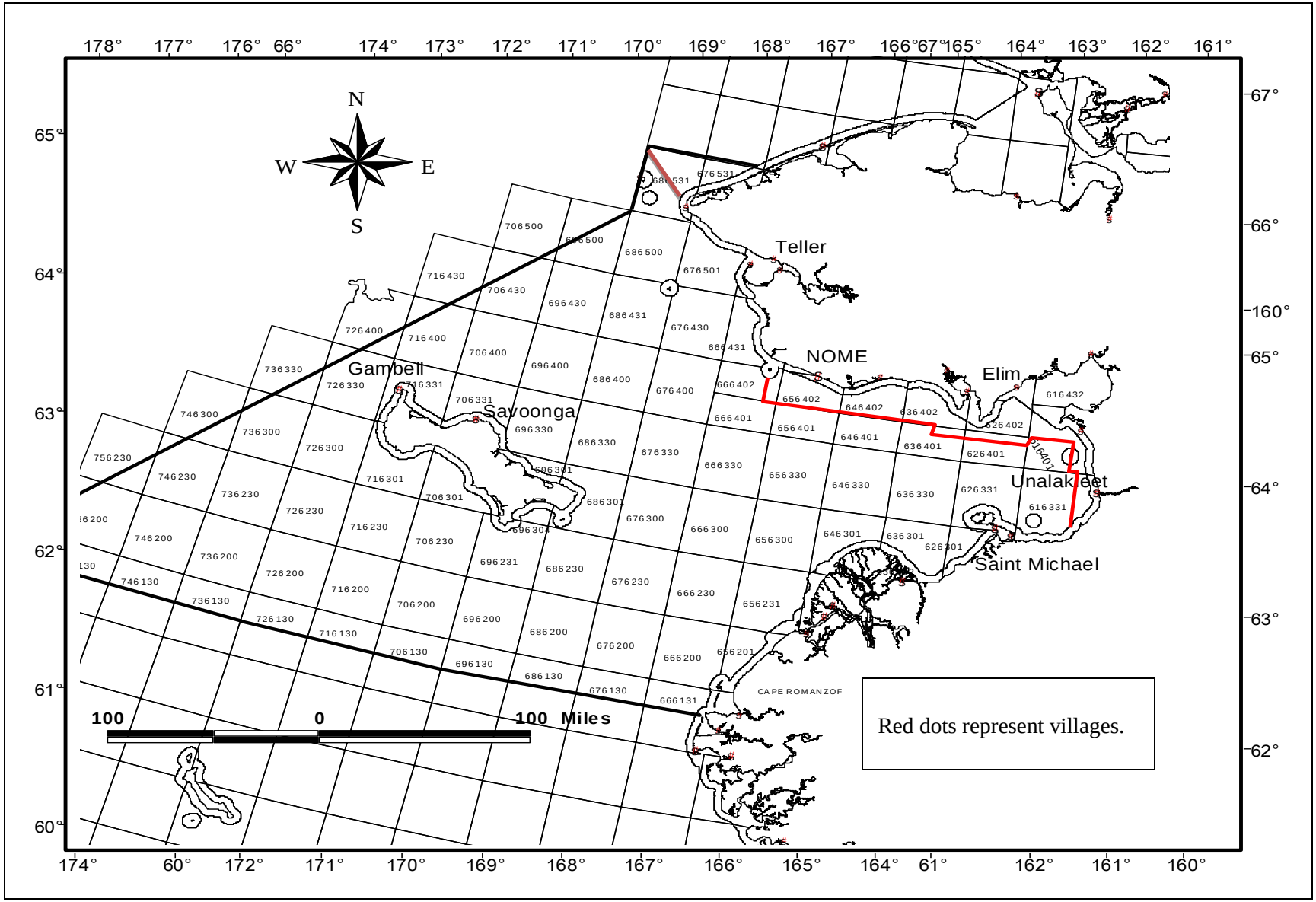

Figure 2. Norton Sound Section of Area Q and associated Statistical Areas.

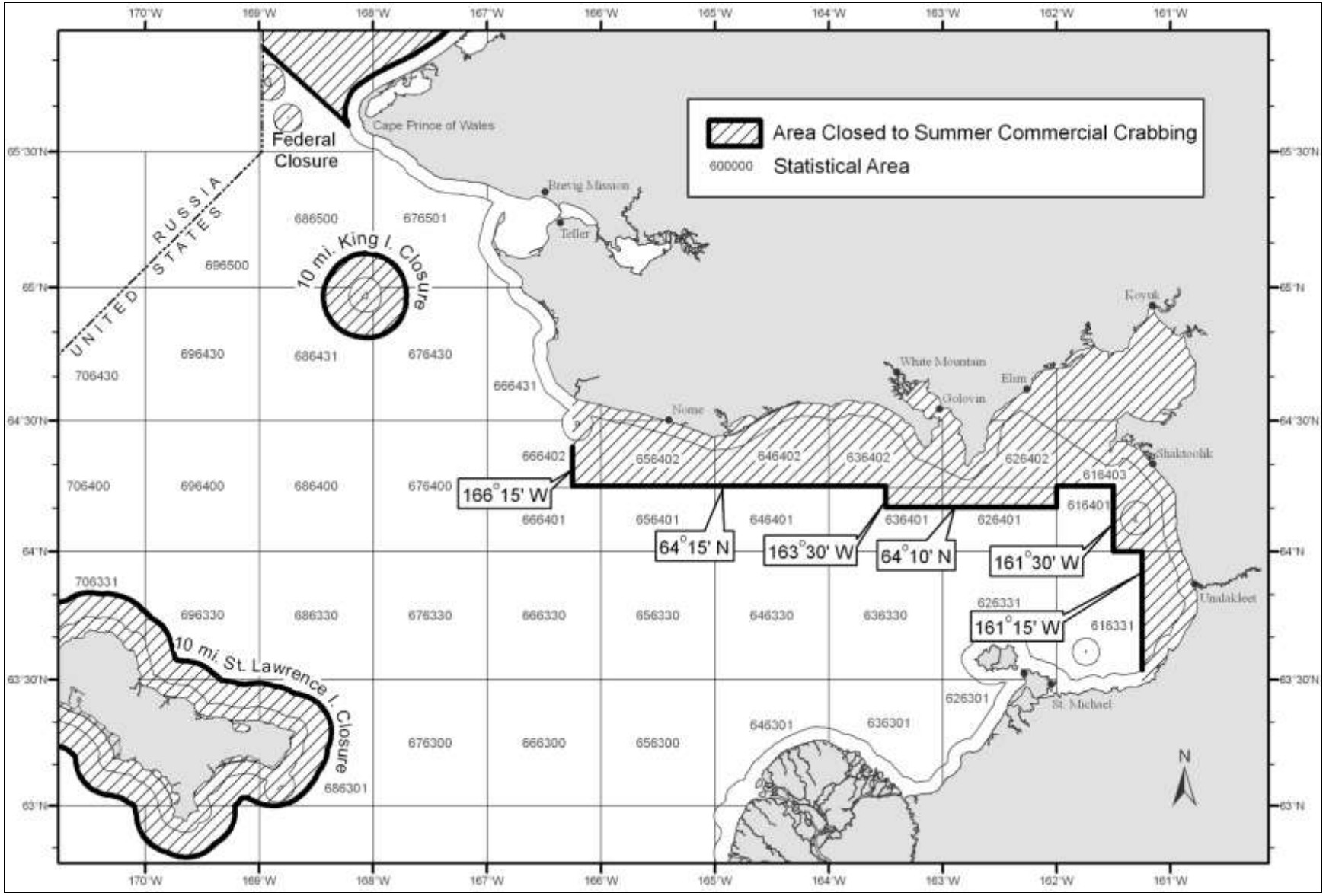

Figure 3. Closed water regulations in effect for the Norton Sound commercial crab fishery.

Table 1. Standardized results from population assessment surveys for red king crab in Norton Sound, 1976-2011.

Year	Date	Research Agency	Gear	Population Abundance Estimates (Number of crab [a])			Legal Male Biomass
				Pre-2 males [b]	Pre-1 Males [b]	Legal Males [c]	(millions of pounds)
1976	9/02 - 09/05	NMFS	Trawl	331,555	808,091	1,742,755	5,228,265
	9/16 - 10/07						
1979 [d]	7/26 - 08/05	NMFS	Trawl			809,799	2,429,397
1980 [e]	7/04 - 07/14	ADF&G	Pots			1,900,000	5,700,000
1981	6/28 - 07/14	ADF&G	Pots			1,285,195	3,855,585
1982	7/06 - 07/20	ADF&G	Pots			353,273	1,059,819
1982	9/05 - 09/11	NMFS	Trawl	356,724	832,581	877,722	2,633,166
1985	7/01 - 07/14	ADF&G	Pots			907,579	2,722,737
1985	9/16 - 10/01	NMFS	Trawl	466,858	707,140	1,051,857	3,155,571
1988	8/16 - 08/30	NMFS	Trawl	565,255	493,030	978,748	2,936,244
1991	8/22 - 08/30	NMFS	Trawl	294,801	303,682	1,287,486	3,862,458
1996	9/07 - 09/18	ADF&G	Trawl	452,580	325,699	536,235	1,608,705
1999	7/28 - 08/07	ADF&G	Trawl	103,832	940,198	1,594,341	4,783,023
2002	7/27 - 08/06	ADF&G	Trawl	427,703	518,638	771,569	2,314,707
2006	7/25 - 08/08	ADF&G	Trawl	775,076	569,833	726,251	2,178,753
2008	7/24 - 08/11	ADF&G	Trawl	795,777	697,442	811,727	2,435,182
2011	7/18 - 08/15	ADF&G	Trawl	431,153	311,550	1,310,634	3,931,902

Note: Blank cells are because the numbers were not calculated.

[a] Population estimates are valid for the date of the survey (i.e., either before or after the summer commercial fishery).

[b] Pre-2 males were defined as 76–89 mm in carapace length (CL) and pre-1 males were defined as 90–104 mm in CL.

[c] Legal male red king crabs were defined as ≥ 121 mm (4.75 in) in carapace width for the pot surveys and all ADF&G trawl surveys (except for 1996, when legal males were defined as at least 105 mm CL), and ≥ 104 mm CL for all of the NMFS trawl surveys (except the 1979 survey which defined legal males as at least 100 mm CL).

[d] Pre-2 male and pre-1 male data are unavailable for the 1979 NMFS trawl survey.

[e] The 1980 pot survey estimate has been revised from the original estimate of 13.4 million pounds which was thought inaccurate due to an under-reporting of recovered tagged crab.

Table 2. Summary of red king crab data from the winter pot surveys, Norton Sound, 1991–2012.

		Females	Males							
					Prerecruits[a] / Sublegal			Legal		
Year (dates)[b]	Pot Lifts	Number Caught	Number Caught	CPUE	Threes[c]	Twos[d]	Ones[e]	Recruits[f]	Postrecruits[g]	CL (mm)
1991	56	8	1,283	22.9	0.2%	4.8%	30.6%	33.5%	30.9%	114
1993	33	1	181	5.5	0.0%	3.3%	8.8%	17.1%	70.7%	118
1995[h]	126	10	776	6.2	2.1%	9.8%	11.4%	32.3%	44.4%	117
1996	159	26	1,582	9.9	9.2%	22.1%	33.1%	10.1%	25.5%	117
1997 (2/18-4/14)	140	60	399	2.9	11.0%	32.3%	20.8%	14.3%	21.6%	118
1998 (2/18-4/22)	84	38	882	10.9	0.8%	36.6%	44.3%	8.7%	9.5%	113
1999 (2/08-4/20)	122	15	1,308	10.7	0.7%	6.5%	42.4%	39.0%	11.3%	110
2000 (2/14-4/10)	93	22	575	6.2	3.1%	13.2%	20.3%	38.6%	24.9%	113
2001 (2/16-4/02)	14	1	44	3.1	4.5%	18.2%	15.9%	13.6%	47.7%	106
2002 (2/13-4/18)	64	46	832	13.0	10.7%	43.1%	25.5%	9.0%	11.8%	117
2003 (2/12-4/14)	86	22	826	9.6	4.2%	19.7%	41.6%	20.2%	14.2%	113
2004 (2/23-4/09)	77	9	286	3.7	0.0%	9.4%	40.2%	37.1%	13.3%	112
2005 (2/18-4/21)	93	20	406	4.4	1.5%	15.8%	23.9%	25.4%	33.5%	116
2006 (1/26-4/19)	85	25	512	6.0	1.0%	28.5%	33.0%	15.6%	21.9%	115
2007 (2/27-4/10)	22	15	160	7.3	8.8%	16.4%	52.8%	11.3%	10.6%	112
2008 (2/11-4/14)	142	102	3,557	25.0	3.4%	36.2%	31.0%	17.8%	11.6%	112
2009 (3/03-4/08)	24	29	526	21.9	1.1%	11.0%	41.8%	23.6%	22.4%	113
2010 (3/29-4/20)	23	4	581	25.3	1.4%	10.2%	31.7%	30.3%	26.5%	112
2011 (3/24-4/15)	27	5	597	22.1	2.7%	15.2%	26.0%	23.3%	32.8%	113
2012 (3/27-4/12)	23	9	676	29.4	3.7%	24.7%	28.7%	14.3%	28.6%	116
Avg. 1991-2011	77	24	806	11.0	3.5%	18.5%	42.2%	21.9%	24.6%	114

[a] Prerecruits are sublegal crabs ≤ 115-mm CL.

[b] The project was not funded in 1992 and 1994.

[c] Prerecruit three crabs are < 76-mm CL.

[d] Prerecruit two crabs are 76-mm to 89-mm CL.

[e] Prerecruit ones are sublegal crabs > 89-mm CL.

[f] Recruits are new-shell, legal crabs ≤ 115-mm CL.

[g] Postrecruits are new-shell, legal crabs > 115-mm CL and all old-shell legal crabs.

[h] Includes catch from 12 sampling sites and from one commercial fisherman's catch on April 5.